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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,364	01/21/2004	Shin Hasegawa	8014-1075	9825

466 7590 08/11/2004

YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
PENDLETON, BRIAN T	

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/760,364	HASEGAWA ET AL.	
	Examiner	Art Unit	
	Brian T. Pendleton	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12-20* is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/21/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 7-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. **Claim 7** recites the limitation "said extraction device" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. The merits of the claim are determined based on the claim wording "said low frequency correction device corrects the sound based on the low frequency noise detected by an extraction device."

5. **Claims 8 and 9** each recite the limitation "said first detection device" in lines 3-4 and "said second detection device" lines 4-5. There is insufficient antecedent basis for these limitations in the claim. The merits of claims 8 and 9 are established with the assumption the claims are worded "said high frequency correction device corrects sound based on the vehicle speed and the opened/closed information of an opening/closing mechanism of the vehicle" and "said full range correction device corrects the sound based on the vehicle speed and the opened/closed information of an opening/closing mechanism of the vehicle", respectively.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1, 2, 5-7 and 11** are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al, US Patent 5,208,866 (hereinafter referenced as Kato).

Regarding **claim 1**, Kato discloses a vehicle automatic sound volume adjusting apparatus which reads on "A sound-correction system in the audio apparatus installed in a vehicle". In figure 3, Kato discloses signal detection circuit 17, microphone 20, microphone amplifier 21, low pass filter 22, noise detection circuit 23, control circuit 12 and electronic rheostat 27. The electronic rheostat 27 varies the level of attenuation of the input signals Lch and Rch according to a control signal from control circuit 12. Electronic rheostat 27 reads on "a music-adjustment device which corrects the sound". Column 4 lines 18-42 disclose that microphone 20, microphone amplifier 21, low pass filter 22, noise detection circuit 23 and control circuit 12 detect the noise perceived inside the vehicle and outputs a control signal to rheostat 27. Signal detection circuit 17, microphone 20, microphone amplifier 21, low pass filter 22 and noise detection circuit 23 read on "a noise-information-detection device which detects noise information" and because rheostat 27 is responsive the noise level output from noise detection circuit 23 it reads on "said music adjustment device corrects the sound according to the noise level detected by said noise information detection device".

Regarding **claim 2**, low pass filter 22 has a cutoff value of 10 Hz and passes only running noise signals below that frequency cutoff. Low pass filter 22 reads on "an extraction device which extracts low frequency noise level that occurs from the vehicle". Rheostat 27 is responsive to the detected low frequency noise which reads on "music adjustment device corrects the sound based on said detected low frequency noise level".

Regarding **claim 5**, Kato discloses signal detection circuit 17 which detects the level of the input audio signal. The detection circuit 17 reads on "a third detection device which detects the music level". The audio signal level from detection circuit 17 is subtracted from the noise level by subtractor 24 and control circuit 12 generates a control signal based on that difference. Rheostat 27, responsive to the control signals from control circuit 12, reads on "music adjustment device corrects the sound based on said detected music level".

Regarding **claim 6**, Kato discloses an alternate embodiment in figure 7 comprising signal detection circuit 17, microphone 20, microphone amplifier 21, low pass filter 22, noise detection circuit 23, control circuit 12, electronic rheostat 27 and frequency characteristic compensation circuit 39. Column 5 line 56 – column 6 line 6 discloses that rheostat 27 and frequency characteristic compensation circuit 39 are responsive to the control signal from control circuit 12. Rheostat 27 and frequency characteristic compensation circuit 39 read on "a music-adjustment device which correct the sound". Column 6 lines 7-17 disclose that as the control signal becomes larger the frequency characteristic changes (e.g. from f_0 to f_1 to f_2). Figure 8 illustrates that successive frequency characteristic curves increase the level of low frequency and high frequency sound. Frequency characteristic compensation circuit 39 reads on "a low frequency correction device which corrects low frequency sound, a high frequency correction device which

corrects high frequency sound." Rheostat 27 reads on "a full range correction device which corrects full range sound."

Regarding **claim 7**, frequency characteristic compensation circuit 39 is responsive to the noise detected by noise detection circuit 23 via low pass filter 22 (extraction device). Thus, circuit 39, which contains the low frequency correction device "corrects the sound based on the low frequency noise detected by an extraction device."

Regarding **claim 11**, the apparatus of Kato carries out a method of automatic sound volume adjustment in a vehicle which reads on "A sound correction method in the audio apparatus installed in a vehicle". Rheostat 27 accomplishes "a music adjustment process of correcting the sound". Microphone 20, microphone amplifier 21, low pass filter 22 and noise detection circuit 23 accomplishes "a noise information detection process for detecting noise information". The rheostat 27 variably adjusts attenuation of the input audio signals in response to a control signal from control circuit 12 which is based on the noise level detected by circuit 23, thus "corrects the sound according to the noise level detected by said noise information detection process".

8. **Claims 1 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by Kasai et al, US Patent 4,641,344 (hereinafter referenced as Kasai).

Regarding **claim 1**, in the abstract, Kasai discloses an audio apparatus for use in varying ambient noise levels whereby the gain of the audio signal is based on the detected noise. Figure 6 illustrates an embodiment with a vehicle 5 which reads on "A sound correction system in the audio apparatus installed in a vehicle". Figure 6 discloses noise level detector 9A, control signal generator 10, and dynamic range controller 3. The dynamic range controller 3, shown in figure

3a, adjusts the gain in gain controller 12 based on a control signal from control signal generator 10. Controller 3 reads on "a music adjustment device which corrects the sound". Column 4 lines 46-55 discloses that noise level detector 9A monitors ambient noise factors. The noise level detector 9A reads on "a noise information detection device which detects noise information". Figure 7(b) illustrates that the noise level detector 9A generates an estimate of the ambient noise and sends that signal to control signal generator 10 which controls the gain of the input audio signal from sound source 1 in dynamic range controller 3 which reads on "said music adjustment device corrects the sound according to the noise level detected by said noise information detection device."

Regarding **claim 4**, a door window opening angle sensor is one of the detectors used to measure ambient noise in the vehicle which reads on "said noise information detection device comprises a second detection device which detects opened/closed information of an opening/closing mechanism of the vehicle".

9. **Claims 1, 3, and 10** is rejected under 35 U.S.C. 102(b) as being anticipated by Dougherty, US Patent 5,872,852 (hereinafter referenced as Dougherty).

Regarding **claim 1**, Dougherty discloses a noise estimating system for audio reproduction equipment in vehicles in figures 7 and 8. Sensor subsystem 610 takes the output of several vehicle sensors, converts the sensor outputs to a digital signal through A/D converter 636 and uses memory 614 to look up a vehicle noise estimate in three frequency ranges (NHD, NMD, NLD) according to the values of the sensors. The noise estimates are used by gain control subsystem 512 to control the gain of variable amplifiers 114L, 114M, and 114H. The variable amplifiers adjust the volume of the music from audio signal source 112. The gain control

subsystem 512 and variable amplifiers 114 read on "a music adjustment device which corrects the sound". The sensor subsystem 610 and memory 614 read on "a noise information detection device which detects noise information". As the gain control subsystem 512 is responsive to noise estimates from noise table memory 614, it reads on "said music adjustment device corrects the sound according to the noise level detected by said noise information detection device."

Regarding **claim 3**, column 19 lines 8-32 discloses that sensor subsystem 610 contains speedometer 622, whose output value along with other sensor output values, is used to generate a noise estimate in the three frequency ranges. The speedometer 622 indicates the vehicle's speed which reads on "a first detection device which detects the vehicle speed". The variable amplifiers 114 are responsive to the noise estimate based on vehicle speed which reads on "said music adjustment device corrects the sound based on said detected vehicle speed."

Regarding **claim 10**, the volume adjustment for the reproduction equipment in the vehicle involves computer processing of the outputs from the vehicle sensors, therefore inherently there exists a computer program located in a memory to execute the steps of the computer processing. The memory reads on "a recording medium which is readable by a computer". The invention is directed to noise estimation and varying the gain in an automobile according to the noise signal estimation which reads on "a sound correction system of an audio apparatus installed in a vehicle" wherein the audio signal source 112 is the audio apparatus. The computer processing concerning the sensor subsystem 610 and eventually the noise look up table 614 reads on "a sound correction program" wherein the program is located in the memory.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. **Claims 8 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Dougherty.

Regarding **claim 8**, the alternate embodiment of Kato discloses a frequency characteristic compensation circuit 39 (high frequency correction device) which corrects the input audio signals based on the noise detected by noise detector 23 via microphone 20. Kato does not disclose "said high frequency correction device corrects the sound based on the vehicle speed and the opened/closed information of an opening/closing mechanism of the vehicle" Dougherty discloses a noise estimating system for audio reproduction equipment in vehicles in figures 7 and 8. Sensor subsystem 610 takes the output of several vehicle sensors and generates a noise estimate in three frequency ranges (NHD, NMD, NLD) according to the values of the sensors. The noise estimates are used by gain control subsystem 512 to control the gain of amplifiers 114L, 114M, and 114H which are coupled a low pass filter, band pass filter and high pass filter, respectively. Gain control subsystem 512 and amplifier 114H represent a high frequency correction device. Two of the sensors are speedometer 622 and window position sensor 630. The gain control subsystem 512 and amplifier 114H correct the sound based on the vehicle speed, as detected by the speedometer 622, and opened/closed information, as detected by window position sensor 630. Dougherty thus discloses "said high frequency correction device

corrects the sound based on the vehicle speed and opened/closed information of an opening/closing mechanism." It would have been obvious to one of ordinary skill in the art at the time of invention to modify the Kato apparatus by substituting the sensor subsystem 610 for the microphone 20, microphone amplifier 21, low pass filter 22 and noise detection circuit 23, and correcting the input sound signal in frequency characteristic compensation circuit 39 based on a noise estimate from vehicle speed and opening/closing of a mechanism of the vehicle, as taught by Dougherty, for the purpose of improving the sound correction by providing a more accurate estimate of noise due to the increased number of sensors.

Regarding **claim 9**, the modified Kato apparatus per the teachings of Dougherty, as applied above, incorporates a sensor subsystem 610 in the stead of the microphone based noise detection system. Kato discloses that the detected noise level is coupled to the control circuit 12 which is coupled to both the frequency characteristic compensation circuit 39 and rheostat 27. As it was advantageous to utilize the noise estimate from the sensor subsystem 610 to alter the high frequency characteristic of the input audio signal, it was also beneficial to utilize the noise estimate for the rheostat 27 for the reason laid forth above. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the control signal generated by the control circuit 12 in Kato based on the vehicle sensors taught by Dougherty, for the rheostat 27 thereby having a "full-range correction device [which] corrects the sound based on the vehicle speed and the opened/closed information of an opening/closing mechanism of the vehicle", for the purpose of basing the overall gain control on an improved noise estimate.

Allowable Subject Matter

12. Claims **12-20** are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

btp

BRIAN PENDLETON
PATENT EXAMINER